

## **ABSTRACT**

An internal combustion engine may be provided with independently controllable valves, fuel injectors and ignition elements that may be used to start the engine without a separate auxiliary device such as an electric starter motor. The engine may fire the cylinders under a startup mode of control at the same time it fires the cylinders under a normal mode of control in order to smooth the transition from start up to normal operating mode. Additionally, an internal combustion engine may use independently controllable valves to stop the engine and ensure that one or more of the pistons come to rest at a position which allows them to be used to restart the engine.